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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/473, 495 12/28/99 ATSUMI

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EXAMINER

MORRISON LAW FIRM  
145 NORTH FIFTH AVENUE  
MOUNT VERNON NY 10550

FISCHER, J

ART UNIT	PAPER NUMBER
1733	3

DATE MAILED: 03/19/01

Please find below and/or attached an Office communication concerning this application or proceeding.

**Commissioner of Patents and Trademarks****BEST AVAILABLE COPY**

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/473,495	ATSUMI ET AL.
	Examiner Justin R Fischer	Art Unit 1733

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 28 December 1999.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 19 and 20 is/are pending in the application.  
 4a) Of the above claim(s) 19 is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 20 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.  
 11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved.  
 12) The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. § 119

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
 \* See the attached detailed Office action for a list of the certified copies not received.  
 14) Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

#### Attachment(s)

- 15) Notice of References Cited (PTO-892)  
 16) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 17) Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.  
 18) Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.  
 19) Notice of Informal Patent Application (PTO-152)  
 20) Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 20 rejected under 35 U.S.C. 103(a) as being unpatentable over Atsumi (JP 09327536 A) and further in view of the admitted prior art (Page 1, Lines 18-25), Utsono (US 5,231,783), Tonen (JP 0298854), and Kusumoto (US 6,106,413). Atsumi teaches a method of manufacturing golf club shafts by laminating a plurality of fiber reinforced composite materials. In this reference, layers are wound, from innermost to outermost, onto a mandrel in the order of an angle layer, a straight layer, a second angle layer, and a second straight layer. The reference remains silent with respect to pre-bonding of the separate plies to form the angle layers and the use of inner and outer reinforcement layers, which are perpendicular and parallel to the longitudinal axis of the shaft, respectively. Both the admitted prior art and Utsono suggest the gluing or bonding of separate plies to form angle layers in the manufacture of golf club shafts. With respect to the inner reinforcement, Tonen teaches a method of manufacturing a golf club shaft using a hoop-reinforcing inner layer that runs perpendicular to the longitudinal axis of the shaft. Kusomoto describes the use of an outer reinforcement layer that runs parallel to the longitudinal axis in the manufacture of tubular bodies. It would have been obvious to one of ordinary skill in the art at the time of the invention to pre-bond plies in

the formation of angle layers, as taught by the prior art and Utsono, and include both inner and outer reinforcing layers that run perpendicular and parallel to the longitudinal axis of the shaft respectively, as taught by Tonen and Kusomoto, in the manufacture of a golf club shaft consisting of alternating angle and straight layers as taught by Atsumi.

In the Atsumi teaching, once the various layers are wound onto the mandrel, the mandrel is cured by exposure to heat and the core is subsequently removed. The above information was obtained from a partial translation by a USPTO translator. Though the use of an oven is not directly specified, one skilled in the art at the time of the invention would recognize the accepted use of an oven to form a cured shaft. Additionally, once the mandrel is removed, one skilled in the art at the time of the invention would appreciate the trimming of the shaft ends if necessary. This would be done to obtain a desired length shaft that contains smooth ends.

With respect to the orientation of both the first and second straight layers, Atsumi discloses that the fibers are orientated at an angle of 0 degrees relative to the longitudinal axis of the shaft. The angle layers consist of two separate plies, one of which is directed +45 degrees from the longitudinal axis of the mandrel and one of which is directed -45 degrees from the longitudinal axis of the mandrel. The entire angle created between the oppositely oriented plies is 90 degrees, which is within the 70-150 degree range outlined by the applicant. As the angle layers are wrapped around the mandrel, the longitudinal axis bisects the 90-degree angle created by the intersection of the two materials. Atsumi also describes that the second angle layer

should have a thickness that ranges between 0.04 and 0.10 millimeters, which is in accordance to the claimed invention.

Regarding the pre-bonding of the plies, the applicant has disclosed as prior art on page 1 of the specification (Lines 18-25) that angle layers are conventionally formed by gluing prepegs together at angles of plus theta and minus theta relative to the longitudinal axis. It appears that the gluing or bonding of these prepegs occurs prior to winding around the mandrel and subsequent curing. Furthermore, Utsono outlines a method of bonding prepeg strips to form a prepeg tape base before winding (Column 4, Lines 8-14). Though the bonding of the prepeg sheets does not form an angle layer, the reference is an additional illustration of bonding prepeg sheets prior to applying them to the mandrel.

Both Atsumi and Utsono fail to mention the use of an inner, perpendicular reinforcement layer and an outer, parallel reinforcement layer. Tonen teaches a method of manufacturing a golf club shaft in which a thin hoop-reinforcing layer that runs perpendicular to the shaft axial line is utilized. The use of a hoop-reinforcing ply on the inner surface of the straight layer enhances torsional rigidity and flexural rigidity while maintaining a lightweight shaft.

With respect to the use of a second reinforcing layer that runs parallel to the longitudinal axis of the shaft, Kusomoto teaches a method of forming tubular bodies using both straight and angle layers. The reference describes the use of an outer prepeg reinforcement that contains parallel fibers relative to the longitudinal axis of the shaft (Column 13, Lines 11-15). The design is similar to the claimed invention in that the

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reinforcement layer is outside a straight layer with parallel fibers relative to the longitudinal axis of the shaft. The outer reinforcement layer provides additional reinforcement to the end portion of the shaft, enhances mechanical strength, and absorbs the vibration.

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Justin R Fischer** whose telephone number is (703) 605-4397. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Ball can be reached on (703) 308-2058. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7718 for regular communications and (703) 305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Justin Fischer

March 16, 2001

  
Michael W. Ball  
Supervisory Patent Examiner  
Technology Center 1700